



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,815	01/06/2006	Tetsuro Mizushima	283358US0PCT	1896
22850 7590 06/11/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER ANGEBRANNDT, MARTIN J	
			ART UNIT	PAPER NUMBER
			1795	
			NOTIFICATION DATE	DELIVERY MODE
			06/11/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,815	<b>Applicant(s)</b> MIZUSHIMA, TETSURO	
	<b>Examiner</b> Martin J. Angebrannt	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 1/6/06, 1/26/07, 10/01/07 & 2/1/08.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :1/6/06,1/26/07,10/01/07 & 2/1/08.

1. Those references cited by the applicant, but marked as not considered have been cited by the examiner making their PGpub of record.
2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandross et al. EP 938027, in view of Loy, et al., "Substituent effect on the sol-gel chemistry of organotrialkoxysilanes", Chem. Mater., Vol. 12(12) pp. 3624-3632 (2000), Shustack et al. '566 and Hiruma et al., '831.

Chandross et al. EP 938027 teaches in example 1, the matrix precursor comprising methyltriethoxysilane and phenyltriethoxysilane combined with lauryl acrylate and photoinitiator CGI-784 and hydrolyzed to form the a holographic recording medium. This was used in example 3 to record a holograms [0028-0034]. The matrix precursor is  $R_n(M)(OR')_{4-n}$  where r is aryl or alkyl, R' is lower alkyl, n is 1 or 2 and M is Si, Ti, Ge, Zr, V or Al and is hydrolyzed to form the form the matrix. [0009,0014-0018,0022-0025]. Organic moieties are disclosed as increasing compatibility with the photopolymer and the free volume/porosity. [0011]. The use of various monomers including isobornyl acrylate, phenoxyethyl acrylate [0019]. The use of organoalkoxysilanes, and particularly trialkoxysilanes is disclosed [0022].

Loy, et al., "Substituent effect on the sol-gel chemistry of organotrialkoxysilanes", Chem. Mater., Vol. 12(12) pp. 3624-3632 (2000) teaches the formation of organic/inorganic materials/xerogels/matrices.  $R(M)(OR')_3$ , where R' is methyl or ethyl and r is hydrogen, methyl,

Art Unit: 1795

ethyl, propyl, butyl, isobutyl, t-butyl, hexyl, octyl, decyl, dodecyl, hexadecyl, octyl, octadecyl, cyclohexyl, vinyl, phenyl, benzyl, phenethyl, chloromethyl, p-chloromethylphenyl or tridecafluoro-1,1,2,2-tetrahydrooctyl (page 3624). The chloromethyl and chloromethylphenyl are shown to react more slowly than the methyl in table 5. (page 3628). The pore diameters for the chloromethyl is significantly larger than that for the methyl substituted silane as shown in tables 7 and 8 (page 3631). The hydrogen, methyl and chloromethyl gels were the most transparent (page 3631, right column). The formation of gels using materials usually used as coupling agents is disclosed (page 3632, left column)

Shustack et al. '566 teaches organometallic coupling agents such as (bromophenyl)trimethoxysilane and (chlorophenyl)trimethoxysilane lowers scattering losses. [0025].

Hiruma et al., '831 teaches coupling agents increase the adhesion between photocurable coatings and the underlying substrate. Useful coupling agents include chloropropyl trimethoxysilane (3/61-4/66).

It would have been obvious to one skilled in the art to modify the examples of Chandross et al. EP 938027 by replacing the methyltriethoxysilane with chloromethyltriethoxysilane as taught by Loy, et al., "Substituent effect on the sol-gel chemistry of organotriethoxysilanes", Chem. Mater., Vol. 12(12) pp. 3624-3632 (2000) with a reasonable expectation of forming useful organic-inorganic matrix holographic recording medium, based upon the transparency disclosed by Loy, et al., "Substituent effect on the sol-gel chemistry of organotriethoxysilanes", Chem. Mater., Vol. 12(12) pp. 3624-3632 (2000) with increase compatibility with the organic

Art Unit: 1795

matrix based upon the teaching of the coupling functionality of chlorinated alky/aryl trialkoxysilanes by Shustack et al. '566 and Hiruma et al., '831.

The showing of the instant specification is limited to the use of mixtures of TEOS and the inventive composition in a particular ratio, acid cured and with the high refractive index monomers used. The claims are quite a bit broader than this. Further it is known from Loy, et al., "Substituent effect on the sol-gel chemistry of organotrialkoxysilanes", Chem. Mater., Vol. 12(12) pp. 3624-3632 (2000) that The hydrogen, methyl and chloromethyl gels were the most transparent and from Chandross et al. EP 938027 that the presence of the  $R_n(M)(OR')_{4-n}$  where R is alkyl or aryl yield matrices which are more organic compatible. The examples of the instant specification in using a mixture of TEOS and the inventive silane has clearly reduced the organic character of the matrix and therefore its compatibility with the photopolymer.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebrannt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin J Angebranndt/  
Primary Examiner, Art Unit 1795

Martin J Angebranndt  
Primary Examiner  
Art Unit 1795

6/6/2008